

WHAT IS CLAIMED IS:

1           1. A DLL (delay locked loop) circuit for outputting a  
2 phase lock signal having a predetermined phase relationship  
3 with an input signal, said DLL circuit comprising:

4           a functional block having a constant-current source; and  
5           bias generation means for generating a constant current  
6 source bias signal for controlling the constant current source  
7 of the functional block, said bias generation means comprising  
8 bias control means which changes the bias signal according to  
9 the frequency of the input signal.

1           2. The DLL circuit according to claim 1, wherein the bias  
2 generation means comprises: a first bias generation circuit for  
3 generating a primary bias signal corresponding to a  
4 predetermined constant current; and a second bias generation  
5 circuit for generating an internal bias signal based on a bias  
6 correction signal output from the bias control means according  
7 to the frequency of the primary bias signal and the input  
8 signal.

1           3. The DLL circuit according to claim 1, wherein the bias  
2 control means comprises: measuring means for measuring the  
3 frequency of the input signal; and correction signal generation  
4 means for outputting a bias correction signal based on the  
5 results of the measurement with the measuring means.

1           4. The DLL circuit according to claim 1, wherein the bias  
2 control means comprises: a control circuit for outputting a  
3 first counting control signal which controls the start of  
4 counting of the input signal based on a predetermined external  
5 signal; a counting control means for outputting a second  
6 counting control signal after the elapse of a predetermined  
7 time from the input of the first counting control signal;  
8 counting means for controlling the start and end of counting of  
9 the input signal respectively according to the first counting  
10 control signal and the second counting control signal; and  
11 correction signal generation means for outputting a bias  
12 correction signal based on the results of counting by the  
13 counting means.

1           5. The DLL circuit according to claim 4, wherein the  
2 output signal of the counting control means is controlled by  
3 the primary bias signal.

1           6. The DLL circuit according to claim 4, wherein:  
2 the counting control means comprises PMOS (p-channel MOS),  
3 first NMOS (n-channel MOS), second NMOS (n-channel MOS), a  
4 capacitative element, and a comparison circuit;  
5 a source electrode terminal of PMOS is connected to a  
6 power terminal, a drain electrode terminal of PMOS is connected  
7 by common connection to a drain electrode terminal of the first  
8 NMOS, a first electrode terminal of the capacitative element,  
9 and a first input terminal of the comparison circuit;

10 a source electrode terminal of the first NMOS is  
11 connected by common connection to a drain electrode terminal of  
12 the second NMOS;

13 a source electrode terminal of the second NMOS, together  
14 with a second electrode terminal of the capacitative element,  
15 is connected to a ground terminal;

16 a gate electrode terminal of each of PMOS and the first  
17 NMOS is connected by common connection to an output terminal of  
18 the control circuit for outputting the first counting control  
19 signal;

20 a gate terminal of the second NMOS is connected to a  
21 primary bias output terminal of the first bias generation  
22 circuit; and

23 a second input terminal of the comparison circuit is  
24 connected to a reference signal terminal having a predetermined  
25 potential, and a second counting control signal is output from  
26 an output terminal of the comparison circuit.

1 7. The DLL circuit according to claim 1, further  
2 comprising:

3 phase shifting means for generating m phase shift  
4 processing signals, wherein m is an integer of two or more,  
5 different from each other in phase based on the input signal;

6 phase comparison means which compares the phase of the  
7 input signal with the phase of the phase lock signal to detect  
8 a phase difference and, based on the detected phase difference,  
9 outputs a phase control signal;

10 phase synthesizing means for outputting a phase corrected  
11 signal having a predetermined phase relationship with the input  
12 signal based on the m phase shift processing signals, produced  
13 by the phase shifting means, and the phase control signal; and  
14 first duty correction means which corrects the duty of  
15 the phase corrected signal and outputs the phase lock signal.

1 8. The DLL circuit according to claim 7, further  
2 comprising second duty correction means for correcting the duty  
3 of the input signal and outputting a duty corrected signal,  
4 wherein the duty corrected signal is input into the phase  
5 shifting means.